DOCUMENT RESUME

ED 238 644 RC 014 516

AUTHOR Amodeo, Luiza B.; And Others
TITLE A Unique Delivery System to Rural Schools: The NMSU-Space Center Microcomputer Van Program.
PUB DATE Oct 83
NOTE 11p.; Paper presented at the National Rural Education Association Conference (Manhattan, KS, October 15-18, 1983).
PUB TYPE Reports - Descriptive (141) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Agency Cooperation; *Computer Literacy; Computer Programs; *Cooperative Programs; Educational Cooperation; Educational Innovation; Educational Objectives; Elementary Secondary Education; Higher Education; Inservice Teacher Education; *Itinerant Teachers; *Microcomputers; *Mobile Educational Services; Program Costs; Program Descriptions; Program Evaluation; Rural Areas; *Rural Education; Rural Schools
IDENTIFIERS Computer Anxiety; International Space Center; International Space Hall of Fame Foundation NM; *New Mexico; New Mexico State University; Texas Instruments

ABSTRACT

Collaboration between New Mexico State University's College of Education and three other entities has led to the computer experience microvan program, implemented in 1983, a unique system for bringing microcomputers into rural New Mexico K-12 classrooms. The International Space Hall of Fame Foundation provides the van, International Space Center staff provide administrative coordination and support for scheduling, Texas Instruments Corporation (TI) supplies the microcomputers and software (including the TI LOGO Curriculum Guide, based on Piaget's theory of intellectual development), and the College provides two instructors who travel with the van, plus various support and maintenance functions. Participating school districts pay $150 per day per visit in program cost so they will feel a commitment to effective utilization of the program. Primary project objectives are computer awareness, computer literacy, and hands-on machine time for students and teachers. Students receive instruction during the school day, after which teachers are provided with more detailed instruction and review of available software. First-year evaluations are positive. Rural teachers, many of whom experienced anxiety about computers, are reassured to learn that the van personnel are professional educators, not computer scientists. Rural students benefit from exposure to microcomputers. Participants want the van to return so they can have more hands-on computer time. (MH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED238644

A UNIQUE DELIVERY SYSTEM TO RURAL SCHOOLS:

THE NMSU-SPACE CENTER MICROCOMPUTER VAN PROGRAM

Luiza B. Amodeo, Ph.D.
Educational Research Center
(505) 646-1706

Jeanette V. Martin, Ph.D.
Department of Curriculum and Instruction
(505) 646-1834

Jerald L. Reece, Ed.D.
Department of Curriculum and Instruction
(505) 646-1027

New Mexico State University
Box 3R
Las Cruces, New Mexico 88003

National Rural Education Association Conference
Kansas State University
October 15-18, 1983
Manhattan, Kansas

RC014516

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

✓ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Luiza B. Amodeo

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

A UNIQUE DELIVERY SYSTEM TO RURAL SCHOOLS:

THE NMSU-SPACE CENTER MICROCOMPUTER VAN PROGRAM

To a large extent the Southwest can be described as a rural area. New Mexico, for example, averages nine people per square mile. However, almost half of the 1.3 million population of this state is concentrated in the Albuquerque metropolitan area while the rest of the population is thinly spread over the rest of the state.

Under these circumstances, programs for public understanding of technology become, first of all, exercises in logistics. New Mexico State University has a statewide mission but has tended to concentrate its facilities in less populated southern New Mexico. One of the crucial problems of the university concerns its attempts to reach a widely dispersed population of current and potential students. One attempt, an off-campus master's degree program offered through the College of Education was initiated five years ago in the four corners area of the state. This program was the beginning of a limited effort on the part of NMSU to achieve visibility and serve citizens throughout the state.

In the spring of 1982, NMSU like many other institutions, faced the problems of declining enrollment along with the realization that improved public relations were needed with elementary and secondary schools throughout the state. At the same time, attacks on education were being reported through the media causing the university administration to consider innovative and alternative means of providing services to New Mexico school districts.

Although faculty and student demands for increased computer technology impacted on the university in 1980, no major decisions were made in regard to how the university might meet these demands until spring 1982. At that time

there was a sudden proliferation of college computer planning committees and the establishment of a University Computer Advisory Group. The College of Education, as well as other colleges, began to consider approaches to integrate computer literacy into various programs. One of the most important efforts on the part of the university and College of Education was the involvement with Texas Instruments, Incorporated and the International Space Center in the implementation of a computer experience microvan program. This program takes microcomputers into rural classrooms throughout the state in order to introduce microcomputer technology and its potentials for educational programs to the students and teachers.

One exciting aspect of the microvan program is the organizational structure and support which crosses state lines and involves support from the Space Center, the International Space Hall of Fame Foundation, New Mexico State University's College of Education and Texas Instruments Corporation. The International Space Hall of Fame Foundation provides the van; the Space Center staff provides administrative coordination and support for scheduling and related areas; Texas Instruments Corporation supplies the microcomputers and software; and New Mexico State University's COE provides the two instructors who travel with the van and, also, various other support and maintenance functions.

Texas Instruments was originally approached for participation because of their development of an elementary curriculum utilizing their LOGO language. The TI LOGO Curriculum Guide, based upon Jean Piaget's theory of intellectual development, is used for most of the learning experience. The proximity of the Texas Instruments Education Office in Lubbock, Texas, also served to facilitate communication and cooperation in the early stages of the

program. In addition to hardware and software support, Texas Instruments has provided training for the staff involved.

Initial discussions regarding the implementation of the computer experience van were launched spring of 1982. The enthusiastic support of all parties made it possible to consider the program fully funded and ready to go by December of the same year. Initial scheduling of the van for the "road" in late January 1983 came about before formal announcements of the program had been distributed. Articles in various newspapers during the holidays caught the attention of teachers and administrators throughout the state.

There was an early determination that the van program would not be "free" for schools. Rather, it was decided that by requiring school districts to contribute to the costs of the program there would be a commitment to effective utilization of the program in their individual schools. The cost to the school, including per diem and travel for the van and two staff, is $150 per day. Though this may have discouraged a few schools from participation, it has proven a manageable sum for most institutions. By early March, the van was essentially booked for the remainder of the school year. A glance at a scheduling map of the participating schools would convince one that an NMSU cooperative statewide computer education program is underway in New Mexico.

The primary objectives of the van project encompass: 1) computer awareness, 2) computer literacy, and 3) hands-on machine time. These objectives are common for both public school students and teachers. The specific objectives are designed and implemented to meet the levels and needs of each group. Since school districts also have their own objectives and needs defined in terms of utilization of the van and its staff, objectives

are negotiated between the school's contact person and the van coordinator. Thus, the schedule, materials, and activities are designed to meet the unique needs of each site to be visited. Due to the distances between rural towns, the van is on the road continuously. The schedule allows sufficient travel time so that the van arrives at the site the night prior to the scheduled visit. The van arrives at the school early enough each morning to allow time for the computers to be set up in the designated area. During the day students are given instruction in computer awareness, literacy and simple programming through the use of LOGO. At the close of the student day, teachers are provided instruction with a more detailed exploration of the microcomputer and a review of available software. The van staff constantly stress that computers are not intended to replace teachers, but are tools to assist, support, and facilitate classroom learning.

Many rural teachers experience a high level of anxiety as a consequence of the expanding technological age. Not the least significant concern is actual fear of the machines. The fears of rural teachers are often alleviated when they learn that the van's staff are professional educators, rather than computer scientists. Criteria for the selection of the professionals include: 1) prior successful experiences with public school students, 2) credibility with public school teachers and administrators, and 3) commitments to providing computer literacy for schools. They are then given any necessary training for the microcomputer van program.

Formative evaluation has been implemented throughout the project. This has included: 1) formal evaluations by students, teachers, administrators and counselors; 2) informal observations by students, teachers, administrators and counselors; 3) anecdotal reports by the traveling staff; 4) logs maintained by the traveling staff; and 5) quantitative data collection and

analysis. From the evaluations, it would seem that this cooperative project is making a unique educational contribution to rural students (grades K through 12), teachers, counselors, and administrators throughout the state of New Mexico.

Evaluation of this statewide program is on-going. Data from spring semester 1983 indicates the following:

1. During spring 1983, the staff and van were either on the road or in the classroom working with teachers and students a total of 60 days, the equivalent of 12 full weeks.
2. The van covered nearly 12,000 miles during one semester, which is 1,000 miles each week.
3. Twenty-six schools in nineteen communities were served.
4. The program was brought to 3,105 students (Pre-school through 12) and 437 administrators, teachers and aides.
5. Presentations on the New Mexico State University campus included the following:
   a. Graduate microcomputer class (EDUC 501)
   b. Undergraduate microcomputer class (EDUC 368)
   c. Gifted Pre-school class
   d. Gifted Adolescent class
   e. Elementary student teaching block (EDUC 447)
6. Two field-based graduate education courses on the use of microcomputers in classrooms were offered.
7. Four presentations during spring 1983 were made at the New Mexico Council of Math and Science Teachers Annual Conference and the New Mexico Council on Computer Users in Education Conference.

The data for fall 1983 are also impressive. As of October 15, 1983, the van has visited rural schools in seven communities and is scheduled to visit nine northern New Mexico rural districts during October and November. A week working with schools in rural Kansas remains to be scheduled during either October or November and five other rural districts in New Mexico have contracted for the van's services in October and November.

The number of personnel working on the van has been increased with the addition of some trained consultants who can assist the coordinator when needed. The benefits to the program with this increased support are already evident in the increased repertoire available to the students, teachers, parents and administrators.

Individuals participating in the program almost always express the desire for more hands-on machine time. Many administrators and teachers indicate a desire in having the computer van return again to their schools.

Sample written comments regarding the value of the program include:

"Come back and let us have more time."

"Very good session. I hope there will be many more sessions like this one. Our students don't have many opportunities for something like this."

"Excellent presentations--very well organized and done."

"We need more . . . more!"

"Nice introduction to the world of computers."

"The whole presentation was fantastic and just to the level of the kids. We could have used about 3 more hours."

"Fantastic way to expose kids to computers."

"My class truly enjoyed this experience. Please come back again!"

"I would like to see this program come back to _____. Students wanted more time."

"It was exciting to see all types of students from Special Ed Reading Lab all the way to superior students all so excited and intrigued with the information offered. Your teachers are excellent and related to the children well. Thanks again for a very exciting day!"

Successes Experienced in the Program

It is important to note that the microcomputer van program is currently in only the second semester of operation. It is common to find problems in the early stages of any innovative program, and especially one which is as geographically extensive and involves several agencies in a cooperative

venture. However, many successes have been achieved. Among these are:

1. The microcomputer van approach is a viable means of delivering services to isolated rural school classrooms. Computer literacy is enhanced for both school personnel and students through this approach.

2. Rural students benefit from exposure to microcomputers in class-size groups. This is most effectively accomplished when two learners work together on each machine.

3. The microcomputer van and its traveling staff offer a cost efficient way to provide inservice education to school personnel.

4. Teacher anxiety toward the use and application of microcomputers is reduced and teachers perceive less threat as they gain experience in using the computer as a learning tool.

5. Rural teachers are found to be particularly enthusiastic for and appreciative of the program being offered in their schools.

6. School personnel become more knowledgeable about and selective of both hardware and software.

7. Services, such as the microcomputer van program, can be effective in building mutually beneficial and positive links among such agencies as school districts, universities, colleges of education, state agencies, and corporations.

Approaches for Effective Implementation

As is the case in any innovative program, much was learned which can be helpful to individuals or agencies wishing to implement similar programs for delivery to rural schools. Suggestions for enhancing the success in the implementation phase include:

1. Staff assigned to the microcomputer van program need to be selected on the basis of criteria which might include:

   a. Successful experience in public schools.

   b. Ability to adjust to adverse educational settings in rural communities.

   c. Credibility with rural school personnel.

   d. Commitment to providing computer literacy to rural schools.

   e. Utilization of women as well as men for the purpose of avoiding stereotyping male/female roles in the computer age.

2. Communicative channels and identification of roles to be assumed by the cooperative agencies and schools must be clarified at the outset of the program. It is important to clarify and help develop realistic expectations of school personnel in each setting prior to arrival of the van.

3. Financial considerations must be carefully developed and should be continually monitored with appropriate adjustment based on experience in the program. Factors which require special attention include: ability of staff to meet lodging, food, and incidental expenses on the road; maintenance of the van and equipment; and revolving fund account capabilities which permits immediate reimbursement of staff for out-of-pocket expenses.

4. Unique logistical problems include the following:

   a. The location of the classroom or other space to be used can be determined in advance and should be based on the accessibility to a loading area which allows for easy access for the rolling of equipment carts into the building and classroom.

   b. The selected classroom should provide maximum flexibility in arrangement allowing two learners to work comfortably at each microcomputer.

   c. Safety precautions need to include sufficient power outlets throughout the classroom; arrangement of traffic patterns to avoid power cords; and ease of access by the staff to each set of learners.

   d. Considering such aspects as number and ages of students, length of school day and inservice needs of school personnel, scheduling must be carefully developed in advance of the van's arrival.

5. Since power fluctuations are common, especially in rural areas, it is important that power surge protection be provided not only to protect equipment but also to avoid problems with software and to prevent problems during instruction.

6. Special care needs to be taken in the constant loading, unloading and transporting of microcomputers and related equipment. Cushioning equipment, securing equipment and supplies in the van to avoid shifting in transit as well as other safety measures are essential.

7. Attention must be given to security measures both when equipment is in the van and when it is located within a classroom. An alarm in the van is essential. School personnel at each site are asked to take responsibility for the equipment while it is in the classroom.

8. To assist in meeting unexpected problems encountered on the road, additional items which make life more comfortable include: shovels, flashlights, tirechains, maintenance tools, fire extinguishers, a portable refrigerator or ice chest when isolated from restaurants, and a couple of 2 x 4's to assist with loading or with moving vehicles through mud, ice, snow, or sand.

Conclusion

It is important to stress that this innovative program was implemented in the midst of budget cut-backs for both the university and school districts in New Mexico. In spite of these financial constraints, the program has been successfully implemented and is positively received throughout the state. Possibly the most significant indication of the success of this program is the fact that its operation has been extended throughout the current school year with the hope that it will be further expanded and continue to serve the educational needs of rural schools throughout New Mexico.